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Skipper butterflies of the Caldera de Lubá. Bioko Island (Equatorial Guinea) (Lepidoptera: Hesperiidae)

I. Martín & P. Cobos

Abstract

Out of seven species belonging to this family and referred for the first time to the interior of the Caldera de Lubá, one was recorded in Equatorial Guinea for the first time: *Celaenorrhinus plagiatus* (Pyrginae). In addition, another three are first records for the Island of Bioko: *Coeliades forestan* (Coeliadinae), *Semalea pulvina* and *Ceratrichia phocion camerona* (Hesperiinae). Finally, there has been no record of *Celaenorrhinus galenus* (Pyrginae) for the last 100 years. The other two skippers found were *Pyrrhochalcia iphis* (Coeliadinae) and *Ceratrichia clara medea* (Hesperiinae). All the species shown were found in primary monsoon forest.
KEY WORDS: Lepidoptera, Hesperiidae, Caldera de Lubá, Bioko Island, monsoon forests Equatorial Guinea.

Hespéridos de la Caldera de Lubá. Isla de Bioko (Guinea Ecuatorial) (Lepidoptera: Hesperiidae)

Resumen

De las siete especies pertenecientes a esta familia y citadas por vez primera en el interior de la Caldera de Lubá, una representa la primera cita para Guinea Ecuatorial: *Celaenorrhinus plagiatus* (Pyrginae). Además, otras tres suponen las primeras citas para Bioko: *Coeliades forestan* (Coeliadinae), *Semalea pulvina* y *Ceratrichia phocion camerona* (Hesperiinae). Finalmente, no hay registros de *Celaenorrhinus galenus* (Pyrginae) desde hace 100 años. Los otros dos hespéridos encontrados fueron *Pyrrhochalcia iphis* (Coeliadinae) y *Ceratrichia clara medea* (Hesperiinae). Todas las especies fueron capturadas en bosque monzónico primario.
PALABRAS CLAVE: Lepidoptera, Hesperiidae, Caldera de Lubá, Isla de Bioko, bosque monzónico, Guinea Ecuatorial.

Introduction

The knowledge of Equatorial Guinea Lepidoptera and particularly of those from Bioko Island is well documented (KHEIL, 1905, 1909; AURIVILLIUS, 1909; SCHULTZE, 1916, 1920; SCHULTZE & AURIVILLIUS, 1923; VIEJO, 1984; VIEJO & IBERO, 1990; DE OLANO & MARCOS, 1993; SPEARMAN *et al.,* 2000), and is completed by important works of general nature on Afrotropical Lepidoptera (ACKERY *et al.*, 1995; D'ABRERA, 1997, 2004, 2009; LARSEN, 2005; WILLIAMS, 2008; VANDE WEGHE, 2010).

However, the Hesperiidae belong to a group that has not been intensively studied, especially the Afrotropical species (DOUGLASS & MILLER, 2003; WAHLBERG *et al*., 2005). Still, information about the distribution biology, biogeography, etc., is becoming more and more solid (COCK 2010; LARSEN & COCK, 2011; COCK & CONGDON, 2011a, 2011b; LARSEN & CONGDON, 2011), also that from Bioko island (SPEARMAN *et al.* 2000; MARTÍN *et al.,* 2011). Their systematic organization (into subfamilies and tribes) is being revised, recognizing just one family (Hesperiidae) of monophyletic origin (EVANS, 1937,

1947, 1955; WARREN *et al*., 2008), suggesting a division into seven subfamilies, off which only three (Coeliadinae, Pyrginae and Hesperiinae) are present in Africa (WARREN *et al*., 2009; CHIBA, 2009).The present work will follow this classification. Generally, skippers represent approximately 18% of global butterflies (HENAO & VARGAS-CHICA, 2009), around 13% of Afrotropical diurnal butterflies (ACKERY *et al.,* 1995; DOUGLASS & MILLER, 2003) and a little more than 5% of Papilionoidea in Bioko, amounting to 13 species on this Island to date (SPEARMAN *et al.,* 2000). In the present work, the species shown are those found in the Caldera de Lubá being therefore the first records of skipper butterflies in the already mentioned south area of Bioko Island (MARTÍN *et al.,* 2011).

Material and Methods

Bioko Island (Republic of Equatorial Guinea) belongs to a small archipelago of four islands, all of them of volcanic origin, lined up in a northeast-southwest direction within the Biafran Gulf (also called Bight of Bonny). In the south, we can find Biao Peak (2,009 m) and the Caldera de Lubá (2,261 m.). In the latter, there is a spectacular 5 km. wide crater with slopes of more than 1,200 m. caused by the collapse of the former summit (FUSTER, 1956). Its bottom, surrounded by vertical hillsides full of jungle, records rain showers up to five times more abundant than the rest of the Island; therefore, it contains a unique sample of monsoon forest in Equatorial Guinea. It is, together with the nearby Mt. Cameroon, the rainiest in Africa (TCHOUTO, 2004). This crater is drained by the River Olé or Tudela and that is the reason why there is only a little lake inside (FUSTER, 1956).

Skippers were collected between 7 and 18 of March 2007. All records, as already mentioned, were taken in the undisturbed primary monsoon forest habitat. The investigated area is located between 3º 18' / 3º 23' N and 8º 28'/8º 33' E. Individuals were detected at a height between 1,089 and 1,744 meters above sea level all of them live in dense woodland with a lower level of scrub, regardless of the slope of the terrain.

Results

Of a total of 71 Lepidoptera Rhopalocera species collected, 7 correspond to skippers, accounting for approximately 10% of the total catch. As previously mentioned, all species shown were found in the monsoon forests. All the specimens were collected by the UPM-Scientific Expedition to the Caldera de Lubá (Exp. UPM).

Family Hesperiidae Latreille, 1809
Subfamily Coeliadinae Evans, 1937

Coeliades forestan (Stoll, [1782]) (fig. 3)
Campamento UPM, 8-III-2007, 1 ♀. (Exp. UPM leg.)

Pyrrhochalcia iphis (Drury, 1773) (figs. 1-2)
Moraca, 6-III-2007, 1 ♀ and 1 ♀. (Exp. UPM leg.)

Subfamily Pyrginae Burmeister, 1878

Celaenorrhinus galenus (Fabricius, 1793) (fig. 4)
Campamento Ureca-Fondo Caldera, 14-III-2007, 2 ♀ N♀ (Exp. UPM leg.); Fondo Caldera, 15-III-2007, 1 ♀ (Exp. UPM leg.); Río Riaco, 16-III-2007, 1 ♀ (Exp. UPM leg.); Campamento UPM, 18-III-2007, 1 ♂ (Exp. UPM leg.).

Celaenorrhinus plagiatus Berger, 1976 (fig. 5)
Campamento UPM, 8-III-2007, 1 ♀, (Exp. UPM leg.); Río San Antonio, 11-III-2007 1 ♀ (Exp. UPM leg); Campamento Ureca-Fondo Caldera, 14-III-2007, 1 ♀, (Exp. UPM leg.).

Subfamily Hesperiinae Latreille, 1809

Ceratrichia phocion camerona Miller, 1971 (fig. 6)

Río Riaco, 15-III-2007 1 ♀, (Exp. UPM leg.); Fondo Caldera 15-III-2007, 2 ♀♀, (Exp. UPM leg.)

Ceratrichia clara medea Evans, 1937 (fig. 7)

Río Riaco, 8-III-2007, 1 ♂ and 1 ♀, (Exp. UPM leg.); Fondo Caldera, 16-III-2007, 1 ♀, (Exp. UPM leg.); Río Riaco, 16-III-2007, 1 ♀ (Exp. UPM leg.).

Semalea pulvina (Plötz, 1879) (fig. 8)

Campamento Ureca-Fondo Caldera, 14-III-2007, 1 ♂, (Exp. UPM leg).

Discussion

The investigated area has not been studied before; all species found represent the first records for the Scientific Reserve of Gran Caldera de Lubá (MARTÍN & COBOS, 2010b, 2011). We should emphasise again that all captures have been carried out in a restricted area encompassing, only a single habitat: primeval primary monsoon forest.

SPEARMAN *et al.* (2000) increased the number of species registered as Rhopalocera in Bioko, to 244, of which 13 belong to family Hesperiidae. This amounts to 5.3% with regard to the total of Rhopalocera, including all habitats (also urban) found on the Island. We have registered a total sum of 71 Rhopalocera (Martín & Cobos *in prep.*), of which 7 species are skippers which translate to *ca* 10%. Our data allow us to raise the number of skippers from Bioko to 17 species. In absolute terms, the diversity of species shown in this work differs, from figures obtained from other authors in similar studies, (13%-21%) (DOUGLAS & MILLER, 2003). We should stress that, unlike in our study, in these other works various different habitats, such as wet forest, dry forest, farmland, and cocoa plantations have been investigated.

There are no previous records of *Coelinades forestan forestan* in Bioko and only WILLIAMS (2008) reports it in a generic manner from Equatorial Guinea, without specifying the location. The species *Pyrrhochalcia iphis* was recorded for the first time from the Island by SPEARMAN *et al.* (2000). These authors reviewed the collection of the National Museum of Natural History of Madrid (Spain) and mention the species from the city of Santa Isabel today called Malabo, (Col: Alonso Martínez, jun. 1925, ♀). We found males and females, confirming the presence of the species in the south of the Island and meaning it surely has a wide distribution, in view of the wide range of its food plants (COCK, 2010; VANDE WEGHE, 2010). *Celaenorrhinus galenus* was quoted by SCHULTZE (1916) from the village of San Carlos (called today Lubá), but it has not been possible to revise the specimens of his collection. Thus, our record of this species is the first for a century. In the present work *Celaenorrhinus plagiatus* is recorded for the first time from Equatorial Guinea, and obviously being the first report from Bioko. *Ceratrichia clara medea,* is widely distributed throughout the African continent (LARSEN, 2005) also reported from Bioko as *C. hollandi media* (ACKERY *et al.,* 1995). KHEIL (1905) quoted *Ceratrichia phocion* only from Rio Muni. Subsequently, the species is confirmed in Equatorial Guinea (MILLER, 1971), but all reports refer to the continental part of the country and there have been no records from Bioko to date. As for *Semalea pulvina*, there have been no records of this species since the beginning of the XX Century, when KHEIL (1909) found it in Cabo San Juan, continental region of Rio Muni (Equatorial Guinea).

The defects in sampling, i.e. not prospecting 100% of the area, may explain the absence of certain species in our study, such as *Celaenorrhinus ilustris, Celaenorrhinus medritina* or *Ceratrichia flava*, despite they have been reported from Bioko by other authors (SPEARMAN *et al.,* 2000; WILLIAMS, 2008). This may be because these species are usually found in various forest types (VANDE WEGHE, 2010). The limited area occupied by the monsoon forest of Bioko, since it is present only in the Caldera de Lubá and the fact that it is an uniform habitat, could explain the lack catches of certain species that have been found previously in other parts of the Island.

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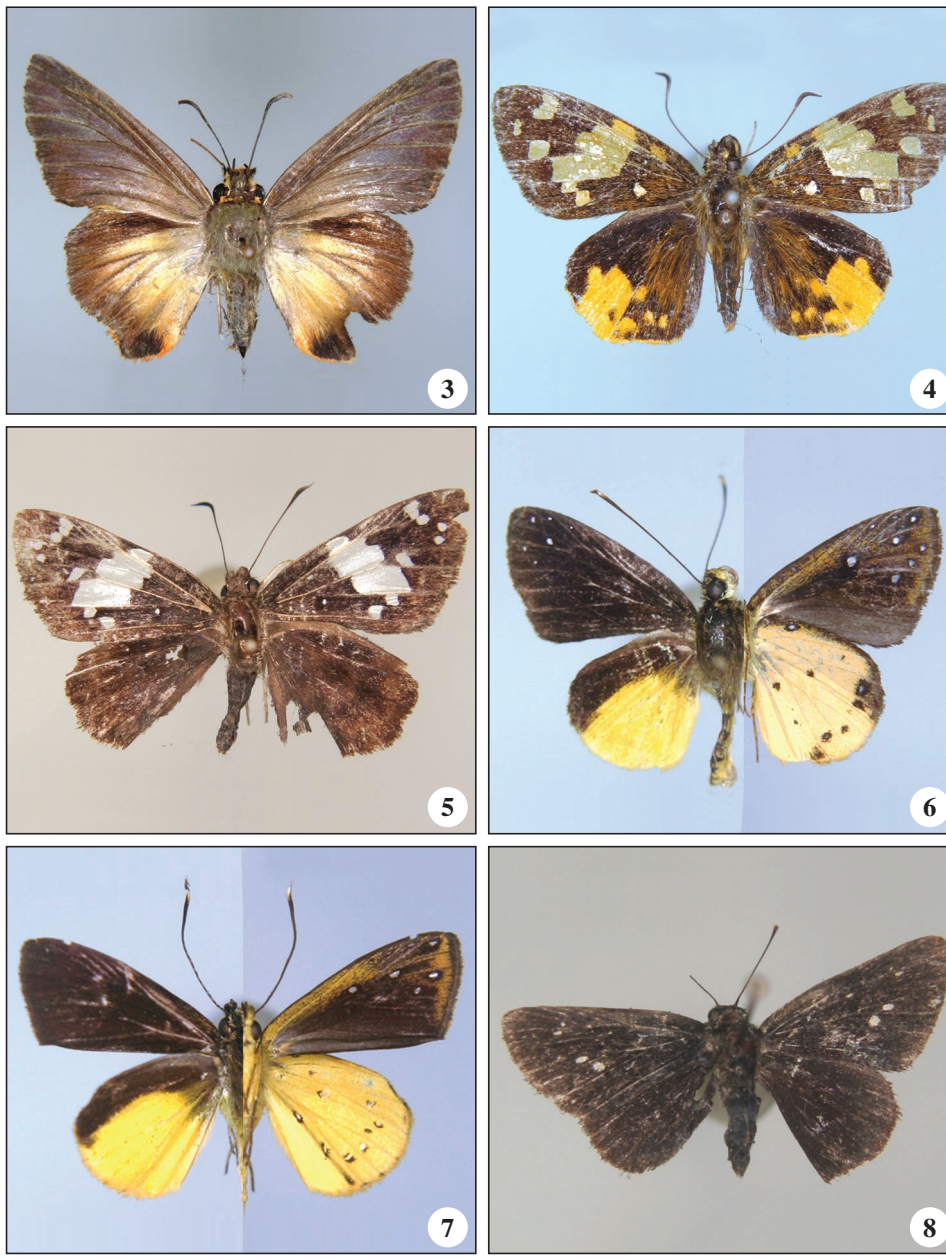
Figs. 1-2.– *Pyrrhochalcia iphis* (Drury, 1773); **1.** Male **2.** Female.



Figs. 3-8.– Male of: **3.** *Coeliades forestan* (Stoll, [1782]); **4.** *Celaenorrhinus galenus* (Fabricius, 1793); **5.** *Celaenorrhinus plagiatus* Berger, 1976; **6.** *Ceratrichia phocion camerona* Miller, 1971 (Upperside and underside); **7.** *Ceratrichia clara medea* Evans, 1937 (Upperside and underside); **8.** Female of *Semalea pulvina* (Plötz, 1879).